the author has succeeded in rendering visible, by making the wheel revolve on an axle of less than its own diameter; and the appearances being in this, as well as in the foregoing case, perfectly consonant to his theory, he considers the explanation given as quite satisfactory.

Dr. Roget concludes by suggesting the possibility of measuring the duration of the impression of light on the retina by observing the apparent velocity of the visible portion of the spokes.

On a new Photometer, with its application to determine the relative Intensities of Artificial Light, &c. By William Ritchie, *A.M., Rector of the Academy at Tain. Communicated by the President.* Read December 16, 1824. [*Phil. Trans.* 1825, *p.* 141.]

Mr. Ritchie, after a brief exposition of the theoretical views which led him to the construction of his photometer, lays down the following as the principles on which it depends:—

1. That radiant heat does not permeate glass.
2. That light is capable of combining with substances which stop it, and expanding them as heat does.
3. That the intensity of light is in the inverse ratio of the squares of the distance.

The photometer, which he then proceeds to describe, consists of two tin-plate cylinders, broad and shallow, each of which is closed at the one end with tin plate, and at the other with a disk of the thickest plate glass, both made air tight. Each of these cylinders or chambers contains in the middle a diaphragm of black paper, with its black side towards the glass, for the purpose (as he expresses it,) of absorbing the light which penetrates the glass, and instantly converting it into heat. The chambers are then fixed back to back at a little distance from each other, and connected by a bent tube in the form of the letter U, containing a small quantity of a coloured liquid.

This instrument is exposed with its glass faces opposite to two lights to be compared, and their equality is judged of by the liquid in the stem remaining stationary.

Its sensibility is described by the author as such, that a single candle placed 10, 20, or 30 feet from it visibly affects it; while a mass of heated iron affording twenty times the heat has no influence.

The author proposes his photometer as peculiarly well adapted to the measure of the quantity of light given out by gas lights. The solar light he describes as powerful enough to drive the liquid in the stem through 20 or 30 feet of tube. He states himself to have an instrument of this kind now making, with which he hopes to render sensible the effect of the moon's rays. Finally, he explains the difference between his instrument and that of Professor Leslie to consist in this,—that in the latter the difference of temperature between the two balls is the quantity measured; in the former the perfect equality of their temperatures is the essential condition.